Name of Organization: USFWS

Type of Organization: Federal Agency

Contact Information: Ms. Anjanette Hintz

Alpena Fishery Resources Office

145 Water Street, Federal Building Rm. 203

Alpena MI 49707

Phone: (517) 356 - 5102 **Extension:**

Fax: (517) 356 - 4651

E-Mail: anjanette_hintz@fws.gov

Project Title: Exotic Impacts on Lake Trout Recruitment

Project Category: Exotic Species

Rank by Organization (if applicable): 1

Total Funding Requested ($): 111,630 **Project Duration:** 2 Years

Abstract:

Dietary analysis of round goby (Neogobius melanostomus) and alewife (Alosa pseudoharengus) on 2 natural reefs in Thunder Bay, Lake Huron will determine the impact of these invasive species on native lake trout (Salvelinus namaycush) recruitment. Populations of goby and alewife, known to be egg predators, pose serious threats to lake trout using nearshore reefs for spawning. Goby and alewife stomachs will be examined for lake trout eggs and fry. Information gathered will provide essential data on impacts of invasive species on lake trout restoration efforts. This demonstration project will be an initial step at quantifying impacts of goby and alewife on lake trout recruitment on nearshore spawning reefs in Lake Huron - a growing concern considering the continual spread of goby to new locations in the lake and to offshore areas.

Geographic Areas Affected by the Project

States:

- ☐ Illinois
- ☐ Indiana
- ☒ Michigan
- ☐ Minnesota
- ☐ New York
- ☐ Pennsylvania
- ☐ Wisconsin
- ☐ Ohio

Lakes:

- ☐ Superior
- ☒ Huron
- ☐ Michigan
- ☐ Erie
- ☐ Ontario
- ☐ All Lakes

Geographic Initiatives:

☐ Greater Chicago ☐ NE Ohio ☐ NW Indiana ☐ SE Michigan ☐ Lake St. Clair

Primary Affected Area of Concern:

Other Affected Areas of Concern:

For Habitat Projects Only:

Primary Affected Biodiversity Investment Area:

Other Affected Biodiversity Investment Areas: Thunder Bay, Lake Huron

Problem Statement:

With the discovery and spread of invasive species in the Great Lakes, there is concern about potential effect of these species on native fish populations. Of particular interest are those native populations that are the object of Great Lakes basin-wide restoration efforts. One such scenario exists regarding shared habitat for the exotic round goby and the native lake trout in Thunder Bay, Lake Huron. Partners have documented lake trout spawning on reefs in Thunder Bay, one of the few locations in U.S. waters of Lake Huron where natural reproduction is occurring. Lake trout are a native deepwater predator that suffered severe depletion and loss of reproducing stocks beginning in the early 1900's due to the combination of sea lamprey predation and commercial overharvest. Each of the Great Lakes is collaboratively rehabilitating lake trout to encourage naturally reproducing stocks. The round goby is an aggressive bottom dwelling fish species that uses rocky reefs preferred by lake trout for spawning. They are batch spawners capable of raising multiple broods in a season - thereby greatly increasing their abundance quickly in relation to other species. We have documented increasing abundances of goby in the Thunder Bay area since their initial discovery in 1997. They are also known to feed on eggs and pose a considerable threat to lake trout recruitment. The potential impact of goby on lake trout exists due to their use of similar habitat, feeding habits, and potential for large abundances. Goby pose a considerable threat for lake trout restoration efforts in the Great Lakes because they have been found in each of the lakes, are continuing to spread to new locations, and are now invading into deeper waters.

The exotic alewife may also be of concern to lake trout rehabilitative efforts. There is some overlap in the time when lake trout are emerging and alewife are coming to shore to spawn. Alewife predation may be occurring on lake trout fry during this time.

Proposed Work Outcome:

The proposed project will involve quantifying the diet of invasive species captured on nearshore lake trout spawning reefs in Thunder Bay, Lake Huron. Two spawning reefs known to be used by lake trout will be sampled. Goby and alewife will be collected in the spring to examine stomachs for lake trout fry, and in the fall to examine stomachs for lake trout eggs. Diets will be quantified.

This project will provide information on potential impacts of invasive species on lake trout that will be applicable in areas where the two species co-exist lakewide and in other Great Lakes.

Project Milestones:	Dates:
Project Start	10/2000
Literature Review/Gear Preparation	03/2001
Sample goby/alewife for fry predation	04/2001
Sample goby/alewife for egg predation	11/2001
Sample goby/alewife for fry predation	04/2002
Sample goby/alewife for egg predation	11/2002
Dietary analysis & report preparation	11/2002
Project End	12/2002

☐ Project Addresses Environmental Justice

If So, Description of How:

☒ Project Addresses Education/Outreach

If So, Description of How:

Information gathered as a result of this project will be provided to the Lake Huron Technical Committee and to other lake managers for their use in considering priorities for lake trout restoration and exotic species management activities. Information will also be relayed via poster and professional presentations at conferences and public events. A manuscript will be prepared and submitted for publication.

Project Budget:

	Federal Share Requested ($)	Applicant's Share ($)
Personnel:	82,600	34,500
Fringe:	0	0
Travel:	3,400	0
Equipment:	5,000	0
Supplies:	500	3,500
Contracts:	0	0
Construction:	0	0
Other:	0	0
Total Direct Costs:	91,500	38,000
Indirect Costs:	20,130	0
Total:	111,630	38,000
Projected Income:	0	0

Funding by Other Organizations (Names, Amounts, Description of Commitments):

Michigan DNR, Alpena Great Lakes Research Station - $37,000
USGS - BRD, Great Lakes Sciences Center - $45,000
Thunder Bay Power Company - $ 1,000

These are" in-kind" services provided by the major participants in the project. Federal costs are not listed in the applicant's match portion of the project budget.

Description of Collaboration/Community Based Support:

The Michigan DNR and USGS-BRD Great Lakes Sciences Center will provide data on spawning lake trout collected on other natural Lake Huron reefs as a source of comparison for spawning on the nearshore reefs in Thunder Bay. The effort and materials used to conduct this work provide in-kind service toward this study.

Michigan DNR, Thunder Bay Power Company, and other USFWS offices will provide manpower to conduct lake trout indexing and to sample for goby and alewife on the reefs. The USFWS will conduct dietary analysis of goby and alewife stomachs.